

Veterinary and Comparative Biomedical Research

CASE REPORT

Rabbit Dystocia and its Surgical Management

Alireza Shaikhzadeh * , Amin Bigham-Sadegh 

Department of Clinical Science, Faculty of Veterinary Medicine, Shiraz University, Shiraz, Iran

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*Correspondence

Author's Email:

alirezashaikhzadeh@gmail.com

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Abstract

The reproductive anatomy of female rabbits is distinctive, as it lacks a uterine body and instead comprises two separate uterine horns, each possessing an individual cervix that opens directly into the vagina. The gestation period in rabbits typically ranges from 29 to 35 days, with an average duration of 30 to 32 days. Dystocia, defined as the failure to expel the fetus from the uterus during parturition, is relatively uncommon in rabbits, as the normal birthing process is typically completed within 30 minutes of its onset. The causes of dystocia in rabbits can be categorized as either maternal or fetal in origin. A 1.5-year-old pregnant female rabbit, weighing 1.2 kg, was presented to Shiraz University Teaching Hospital in a depressed and mildly dehydrated state. The owner reported a history of vaginal bleeding and straining one week prior to admission. The present study, reports a case of a rabbit dystocia and its surgical management. On clinical examination, the rabbit displayed signs of anorexia and lethargy. Ultrasonographic examination confirmed the presence of three nonviable fetuses, as no fetal heartbeats were detected. Based on the history and clinical findings, dystocia was confirmed. Given the deteriorating condition of the rabbit and the confirmed presence of nonviable fetuses, an emergency en bloc cesarean section was decided upon. Upon completing the surgery and removing the uterus, it was opened, revealing three macerated fetuses. After 5 days' postoperative management and 14 days' follow up, rabbit recovered with no complication.

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Introduction

The reproductive anatomy of female rabbits is distinctive, as it lacks a uterine body and instead comprises two separate uterine horns, each possessing an individual cervix that opens directly into the vagina (1, 2). The gestation period in rabbits typically ranges from 29 to 35 days, with an average duration of 30 to 32 days. Litter size generally varies between 4 and 10 kits, depending on the breed and its size (1, 2). Pregnancy in rabbits can be diagnosed through abdominal palpation as early as 10 to 14 days post-mating (1). Dystocia, defined as the failure to expel the fetus from the uterus during parturition, is relatively uncommon in rabbits, as the normal birthing process is typically completed within 30 minutes of its onset (3, 4). Clinical signs of dystocia include prolonged uterine contractions, unproductive straining, and abnormal vaginal discharge, such as bloody or green-brown fluids (2). The causes of dystocia in rabbits can be categorized as either maternal or fetal in origin. Maternal factors include a narrow pelvic canal, uterine inertia, obesity, and inadequate nutrition (4). Fetal causes may include abnormalities such as malpresentation, malposition, malposture, fetal oversize, or intrauterine fetal death (4, 5). When vaginal delivery is not feasible and the lives of the doe or the kits are at risk, a cesarean section (C-section) is indicated (6).

Case Presentation

History

A 1.5-year-old pregnant female rabbit, weighing 1.2 kg, was presented to Shiraz University Teaching Hospital in a depressed and mildly dehydrated state. The owner reported a history of vaginal bleeding and straining one week prior to admission, which resolved approximately two hours after onset. No treatment or medication had been administered during the intervening period, and the rabbit's general condition remained stable until the onset of anorexia and lethargy one day prior to presentation.

Physical Examination

On clinical examination, the rabbit displayed signs of anorexia and lethargy. There was no evidence of vaginal bleeding or foul-smelling discharge. Vital signs revealed a rectal temperature of 40°C and a heart rate of 180 beats per minute. Abdominal palpation confirmed the presence of three fetuses; however, no fetal movement was detected.

Diagnostics

As differential diagnosis we should consider GI stasis,

uterine tumors, uterine torsion or rupture and metritis or pyometra. But Ultrasonographic examination confirmed the presence of three nonviable fetuses, as no fetal heartbeats were detected. A lateral abdominal radiograph further corroborated this finding by displaying the skeletal outlines of three fetuses. A complete blood count revealed mild neutrophilia (52%). Given the rabbit's unstable condition, vaginal examination and unnecessary manual manipulations were avoided to prevent further stress or complications (figure 1, 2 and 3).

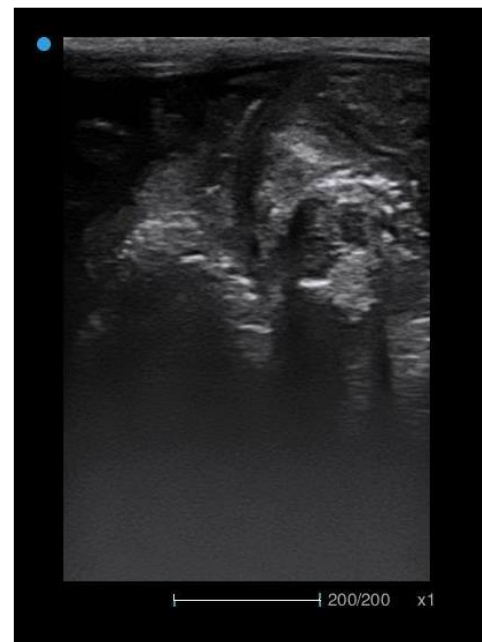


Figure 1. Sonographic view of fetuses before referring to surgery

Treatment

Based on the history and clinical findings, dystocia was diagnosed. Vaginal fetal extraction was deemed unfeasible due to the narrow vulvar passage. Given the rabbit's deteriorating condition and the confirmed presence of nonviable fetuses, an emergency en bloc cesarean section was performed based on owner consent.

The anesthetic protocol consisted of an intramuscular injection of xylazine (5 mg/kg) and ketamine (35 mg/kg). Within a few minutes, the rabbit achieved a surgical plane of anesthesia. Vital parameters, including temperature, heart rate, and respiratory rate, were continuously monitored throughout the procedure.

The surgical site, located on the mid-ventral abdomen, was shaved and prepared with three rounds of povidone-iodine scrub. A caudal mid-ventral incision was made 1 cm caudal to the umbilicus and extended through the linea alba. The gravid uterus was identified and carefully exteriorized. The

ovarian pedicles were ligated using 2-0 Vicryl sutures, with the procedure repeated on both sides. The cervix was ligated, and the entire reproductive tract was excised (figure 4 and 5).

Closure was performed in layers: the linea alba and subcutaneous tissues were sutured using 2-0 Vicryl in a simple continuous pattern, while the skin was closed with 3-0 polyamide sutures in a cruciate mattress pattern.

Postoperative care included the administration of antibiotics (enrofloxacin, 10 mg/kg intramuscularly once daily for 5 days) and analgesics (meloxicam, 0.2 mg/kg intramuscularly for 5 days).

Upon completing the surgery and removing the uterus, it was opened, revealing three macerated fetuses.

Outcome

After 5 days' postoperative management and 14 days' follow up, rabbit recovered with no complication.



Figure 2. Lateral radiographic view represented 3 fetuses



Figure 3. Ventrolateral view of fetuses

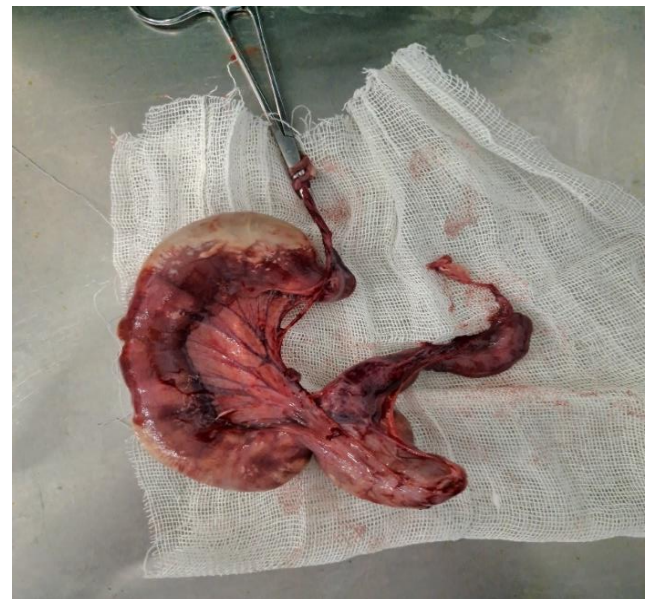


Figure 4. Post-operative view of gravid uterus after removal from body



Figure 5. Macerated fetuses after opening the uterus postoperatively

Discussion

In most animals, the causes of dystocia can be classified as either maternal or fetal. Among maternal causes, uterine inertia is the primary factor, which can be further categorized as either primary or secondary (7). Primary uterine inertia refers to the failure of myometrial contractions to initiate, often associated with prolonged pregnancy, obesity, hypocalcemia, or small litter sizes (4). Secondary uterine inertia, also referred to as uterine fatigue, occurs when myometrial contractions cease following prolonged and ineffective attempts to expel the fetus (4, 6).

This form of uterine inertia is more commonly observed than the primary type (8, 9).

In this case, dystocia was most likely attributable to secondary uterine inertia, as the rabbit exhibited straining for several hours after the onset of parturition but subsequently ceased.

For the medical management of dystocia, ecboic agents such as oxytocin and calcium are commonly employed (4). Oxytocin promotes calcium influx into myometrial cells, thereby enhancing the frequency and intensity of uterine contractions (6). In rabbits, a dose of 1 to 3 units of oxytocin is typically effective in inducing uterine contractions (7). However, in this case, the patient's unstable condition necessitated immediate surgical intervention. The decision to proceed with surgery without the administration of ecboic agents was made in order to save time and optimize the chances of survival.

Litters retained in the uterus for more than 35 days inevitably result in fetal death, leading to mummification or maceration (10). In this patient, an open cervix facilitated microbial contamination of the uterus, resulting in infection and fetal maceration. Given the presence of an infected uterus, an en bloc cesarean section was performed. Under more favorable conditions, a standard cesarean section with uterine preservation could have been considered.

Conclusion

Dystocia and obstetrical complications are relatively uncommon in rabbits but can be diagnosed through abdominal palpation, ultrasonography, and radiology. Special attention should be given to the nutritional management of rabbits during pregnancy to minimize the risk of complications. Regardless of whether the cause of dystocia is maternal or fetal, management can be either medical or surgical. This case highlights that cesarean section is an effective and efficient treatment for dystocia in rabbits.

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Authors' Contributions

Both authors contributed to the research and writing of the article.

Data availability

All data generated or analyzed during this study are included in this published article.

Ethical approval

All applicable international, national, and institutional guidelines for the care and use of animals were followed.

Conflict of Interest

The authors declare that they have no conflict of interest.

Consent for Publication

Not applicable.

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